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EXAMINER	
BODDIE, WILLIAM	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/757,104	ANDERSON ET AL.
	Examiner	Art Unit
	William Boddie	2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *5/9/05, 1/13/04*.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 14 recites the limitation "said force generating voltage" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3, 5-9, 12-16, 18-22, 24-26, 28-29, 31-33, 35-38, 55-56 and 58-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hung et al. (US 6,329,738) in view of Han et al. (US 6,727,562) and further in view of McCartney et al. (US 5,088,806).

With respect to claim 1, Hung discloses, a diffractive light device (DLD) (figs. 21-22) comprising:

a substrate (14 in fig. 1b);

a force plate (32 in fig. 1b) disposed on said substrate, said force plate configured to produce an electrostatic force in response to an applied voltage (col. 8, lines 62-65);

a pixel plate (30 in fig. 1b) disposed adjacent to said force plate, wherein a position of said pixel plate is partially set by a flexure (26a/b in fig. 1b) coupled to said pixel plate.

While Hung compensates for differences in pixel plate length (col. 14, lines 11-14), Hung does not expressly disclose compensating the DLD for temperature variations.

Han discloses, compensating the operation of an optical MEMS device for temperature fluctuations (col. 2, lines 6-12).

At the time of the invention it would have been obvious to one of ordinary skill in the art to compensate the display of Hung for temperature variations as taught by Han.

The motivation for doing so would have been, to ensure that the selected wavelength can be fixed without substantial impact due to variations of environmental conditions (Han; col. 2, lines 10-12).

Neither Hung nor Han expressly disclose; a thermal sensor coupled to a DLD.

McCartney discloses, a temperature sensor (52 in fig. 5) thermally coupled to a display device (50 in fig. 5), wherein said temperature sensor is configured to produce a temperature compensated voltage in response to a thermal measurement performed by said temperature sensor (col. 4, lines 18-30).

Hung, Han and McCartney are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by McCartney on the diffractive light device of Hung and Han.

The motivation for doing so would have been to provide a more accurate and reliable displayed image (McCartney; col. 2, lines 22-43).

Therefore it would have been obvious to combine McCartney and Han with Hung for the benefit of a temperature-independent display to obtain the invention as specified in claim 1.

With respect to claim 2, Hung, Han and McCartney disclose, the DLD of claim 1 (see above).

McCartney further discloses, an offset voltage generator (54-56 in fig. 5), wherein said offset voltage generator is configured to generate a temperature compensated offset voltage based on said thermal measurement (col. 3, lines 12-24).

With respect to claim 3, Hung, Han and McCartney disclose, the DLD of claim 2 (see above).

Hung further discloses, compensating for a change in spring force exerted on an optical plate by said flexure at measured lengths (col. 14, lines 11-14).

Additionally Han discloses, compensating for a change in spring force exerted on an optical plate (membrane) by said flexure at a measured temperature (col. 6, lines 47-52).

With respect to claim 5, Hung, Han and McCartney disclose, the DLD of claim 2 (see above).

McCartney further discloses, wherein said offset voltage generator comprises:

a signal digitizer (54 in fig. 5) configured to digitize said thermal measurement;

a system controller (55 in fig. 5) communicatively coupled to said signal digitizer; and

a data storage device (55 in fig. 5) communicatively coupled to said system controller, wherein said data storage device contains a plurality of offset voltage value associated with said digitized thermal measurement (col. 3, lines 18-24).

With respect to claim 6, Hung, Han and McCartney disclose, the DLD of claim 2 (see above).

McCartney further discloses, wherein said offset voltage generator comprises:

a signal digitizer (54 in fig. 5) configured to digitize said thermal measurement;

a system controller (55 in fig. 5) communicatively coupled to said digitizer, said system controller configured to combine said digitized thermal measurement to a uncompensated digital color count (command word in fig. 5); and

a digital to analog converter (56 in fig. 5) communicatively coupled to said system controller, wherein said digital to analog converter is configured to convert said combined digital signal into a thermally compensated analog voltage.

With respect to claim 7, Hung, Han and McCartney disclose, the DLD of claim 2 (see above).

McCartney further discloses, a variable voltage source (56-57 in fig. 5) communicatively coupled to said offset voltage generator, wherein said variable voltage

source is configured to generate a temperature compensated offset voltage in response to a command signal received from said offset voltage generator (col. 4, lines 27-30).

With respect to claim 8, Hung, Han and McCartney disclose, the DLD of claim 2 (see above).

McCartney further discloses, a summing circuit, wherein said summing circuit is configured to combine said temperature compensated offset voltage with a color voltage bias (col. 4, lines 34-44) to produce said temperature compensated voltage.

With respect to claim 9, Hung, Han and McCartney disclose, the DLD of claim 8 (see above).

McCartney further discloses, wherein said color voltage bias comprises a non-compensated voltage bias (col. 4, lines 30-33).

With respect to claim 12, the only difference between claim 12 and claim 1 is the device is a MEMS device instead of a DLD device. As Hung is clearly a MEMS device claim 12 is rejected on the same merits shown above in the rejection of claim 1.

With respect to claim 13, Hung, Han and McCartney disclose, a MEMS of claim 12 (see above).

Hung further discloses, a support post (216 in fig. 22) extruding from said substrate; and

a flexure (26a/b in fig. 1b for example) coupling said pixel plate (30 in fig. 1b) to said support post (28a/b in fig. 1b), wherein said flexure is configured to exert a spring force on said pixel plate opposing said electrostatic force (col. 6, line 63 – col. 7, line 4);

said spring force predictably varying with a variation in temperature (col. 14, lines 11-14, discloses, compensating for increased spring force).

With respect to claims 14-16 and 18-22, these claims are seen as sufficiently equivalent to claims 2-3 and 5-9 to be rejected on the same merits shown above in the rejection of claims 2-3 and 5-9.

With respect to claim 24, Hung discloses, an image display device comprising:

a system controller (col. 27, lines 5-34);

a variable voltage source communicatively coupled to said system controller (18 in fig. 1b); and

an array of DLDs communicatively coupled to said variable voltage source, each DLD of said DLD array including a substrate (14 in fig. 1b),

a force plate disposed on said substrate (32a/b in fig. 1b), said force plate configured to produce an electrostatic force in response to a voltage applied by said voltage source (col. 8, lines 62-65),

a pixel plate disposed adjacent to said force plate (30 in fig. 1b), wherein a position of said pixel plate is partially determined by a flexure coupled to said pixel plate (26a/b in fig. 1b).

While Hung compensates for differences in pixel plate length (col. 14, lines 11-14), Hung does not expressly disclose compensating the DLD for temperature variations.

Han discloses, compensating the operation of an optical MEMS device for temperature fluctuations (col. 2, lines 6-12).

At the time of the invention it would have been obvious to one of ordinary skill in the art to compensate the display of Hung for temperature variations as taught by Han.

The motivation for doing so would have been, to ensure that the selected wavelength can be fixed without substantial impact due to variations of environmental conditions (Han; col. 2, lines 10-12).

Neither Hung nor Han expressly disclose, a thermal sensor coupled to a DLD.

McCartney discloses, a temperature sensor (52 in fig. 5) thermally coupled to a display device (50 in fig. 5), wherein said temperature sensor is configured to produce a temperature compensated voltage in response to a thermal measurement performed by said temperature sensor (col. 4, lines 18-30).

Hung, Han and McCartney are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by McCartney on the diffractive light device of Hung and Han.

The motivation for doing so would have been to provide a more accurate and reliable displayed image (McCartney; col. 2, lines 22-43).

Therefore it would have been obvious to combine McCartney and Han with Hung for the benefit of a temperature-independent display to obtain the invention as specified in claim 24.

With respect to claims 25-26 and 28-29, these claims are seen as sufficiently equivalent to claims 2-3 and 5-9 to be rejected on the same merits shown above in the rejection of claims 2-3 and 5-9.

With respect to claim 31, the only difference in scope between claim 31 and claim 1, is the replacement of force plate, pixel plate and temperature with "means for" language. As shown above in the rejection of claim 1, the means provided by Hung, Han and McCartney are seen as sufficiently equivalent to the Applicant's disclosed structure to satisfy the "means for" language of claim 31. For this reason, claim 31 is rejected on the same merits shown above in claim 1.

With respect to claims 32-33 and 35-38, these claims are seen as sufficiently equivalent to claims 2-3 and 5-9 to be rejected on the same merits shown above in the rejection of claims 2-3 and 5-9.

With respect to claim 55, Hung discloses, a MEMS (fig. 1b) comprising:

a flexure (26a/b in fig. 1b);

a voltage generator (18 in fig. 1b).

While Hung compensates for differences in a pixel plate length (col. 14, lines 11-14), Hung does not expressly disclose compensating the DLD for temperature variations.

Han discloses, compensating the operation of an optical MEMS device for temperature fluctuations (col. 2, lines 6-12).

At the time of the invention it would have been obvious to one of ordinary skill in the art to compensate the display of Hung for temperature variations as taught by Han.

The motivation for doing so would have been, to ensure that the selected wavelength can be fixed without substantial impact due to variations of environmental conditions (Han; col. 2, lines 10-12).

Neither Hung nor Han expressly disclose, a thermal sensor coupled to a DLD.

McCartney discloses, a temperature sensor (52 in fig. 5) thermally coupled to a display device (50 in fig. 5), wherein said temperature sensor is configured to produce a temperature compensated voltage in response to a thermal measurement performed by said temperature sensor (col. 4, lines 18-30).

Hung, Han and McCartney are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by McCartney on the diffractive light device of Hung and Han.

The motivation for doing so would have been to provide a more accurate and reliable displayed image (McCartney; col. 2, lines 22-43).

Therefore it would have been obvious to combine McCartney and Han with Hung for the benefit of a temperature-independent display to obtain the invention as specified in claim 55.

With respect to claims 56 and 58-60, these claims are seen as sufficiently equivalent to claims 2-3 and 5-9 to be rejected on the same merits shown above in the rejection of claims 2-3 and 5-9.

4. Claims 1, 10-11, 23, 30, 39 and 61-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hung et al. (US 6,329,738) in view of Han et al. (US 6,727,562) and further in view of Mori et al. (US 5,903,251).

With respect to claim 1, Hung discloses, a diffractive light device (DLD) (figs. 21-22) comprising:

a substrate (14 in fig. 1b);

a force plate (32 in fig. 1b) disposed on said substrate, said force plate configured to produce an electrostatic force in response to an applied voltage (col. 8, lines 62-65);

a pixel plate (30 in fig. 1b) disposed adjacent to said force plate, wherein a position of said pixel plate is partially set by a flexure (26a/b in fig. 1b) coupled to said pixel plate.

Hung does not expressly disclose compensating the DLD for temperature variations.

Han discloses, compensating the operation of an optical MEMS device for temperature fluctuations (col. 2, lines 6-12).

At the time of the invention it would have been obvious to one of ordinary skill in the art to compensate the display of Hung for temperature variations as taught by Han.

The motivation for doing so would have been, to ensure that the selected wavelength can be fixed without substantial impact due to variations of environmental conditions (Han; col. 2, lines 10-12).

Neither Hung nor Han expressly disclose, a thermal sensor coupled to a DLD.

Mori discloses, a temperature sensor (5 in fig. 1) thermally coupled to a display device (6 in fig. 1), wherein said temperature sensor is configured to produce a temperature compensated voltage in response to a thermal measurement performed by said temperature sensor (col. 4, lines 30-37).

Hung, Han and Mori are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by Mori on the diffractive light device of Hung.

The motivation for doing so would have been to provide a more accurate and reliable displayed image even when temperature distribution is present in the display panel (Mori; col. 2, lines 35-38).

Therefore it would have been obvious to combine Mori with Hung and Han for the benefit of a temperature-independent display to obtain the invention as specified in claim 1.

With respect to claim 10, Hung, Han and Mori disclose, the DLD of claim 1 (see above).

Mori further discloses, wherein said temperature sensor comprises a thermal sense resistor (thermistor; col. 4, line 18).

With respect to claim 11, Hung, Han and Mori disclose, the DLD of claim 10 (see above).

Mori further discloses, wherein said temperature sensor is configured to measure an average temperature of an array of pixels (col. 6, lines 30-45).

With respect to claims 23, 30, 39 and 61-62, these claims are seen as sufficiently equivalent to claims 10-11 to be rejected on the same merits shown above in the rejection of claims 10-11.

5. Claims 4, 17, 27, 34 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hung et al. (US 6,329,738) in view of Han et al. (US 6,727,562) and McCartney et al. (US 5,088,806) and further in view of Naiki et al. (US 7,038,654).

With respect to claim 4, Hung, Han and McCartney disclose, the DLD of claim 2 (see above).

Neither Hung, Han nor McCartney disclose, a low pass filter.

Naiki discloses, wherein an offset voltage generator comprises:

a buffer amplifier (OP2 in fig. 4; fig. 4 is a view of the temperature sensor circuit);

a low pass filter (13 in fig. 10) electrically coupled to said buffer amplifier (col. 11, lines 46-49); and

a scaler (14-15 in fig. 8) electrically coupled to said low pass filter (clear from fig. 8 that all the components are electrically coupled).

Naiki, Han, Hung and McCartney are analogous art because they are all from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the offset voltage circuitry taught by Naiki in the display device of Hung, Han and McCartney.

The motivation for doing so would have been a more accurate temperature sensor with only a negligible measurement error (Naiki; col. 2, lines 1-4).

Therefore it would have been obvious to combine Naiki with Hung, Han and McCartney for the benefit of more accurate temperature measurements to obtain the invention as specified in claim 4.

With respect to claims 17, 27, 34 and 57, these claims are seen as sufficiently equivalent to claim 4 to be rejected on the same merits shown above in the rejection of claim 4.

6. Claims 40, 42, 44-46, 49-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCartney et al. (US 5,088,806) in view of Moon et al. (US 7,019,883).

With respect to claim 40, McCartney discloses, a method of compensating for thermal effects in a LCD comprising:

measuring a temperature of said LCD (col. 4, lines 18-19);

generating a temperature compensated offset voltage (col. 4, lines 21-27) associated with an effect said temperature will have on said LCD (slow response time; col. 4, lines 9-15); and

producing a temperature compensated voltage on said LCD using said temperature compensated offset voltage, wherein applying said temperature

compensated voltage to said LCD compensates for said thermal effects (col. 4, lines 27-30).

McCartney does not expressly disclose, compensating thermal effects in a DLD.

Moon discloses, compensating thermal effects (temp sensor, temperature control in fig. 90 (on sheet 33 of 51); col. 24, lines 17-36) in a diffractive light device (2^{nd} sentence in abstract; col. 7, lines 26-31).

Moon and McCartney are analogous art because they are both directed to the same problem solving area, overcoming thermal effects.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the LCD of McCartney with the DLD of Moon for the well-known benefit of increased contrast possible with DLD devices.

Therefore it would have been obvious to combine Moon with McCartney for the benefit of increased contrast to obtain the invention as specified in claim 40.

With respect to claim 42, Moon and McCartney disclose, the method of claim 40 (see above).

McCartney further discloses, wherein said generating a temperature compensated offset voltage comprises:

providing said signal to an offset voltage generator (54-56 in fig. 5), wherein said offset voltage generator is configured to generate a temperature compensated offset voltage based on said signal (col. 3, lines 12-24).

With respect to claim 44, Moon and McCartney disclose, the method of claim 42 (see above).

McCartney further discloses, wherein said offset voltage generator comprises:

a signal digitizer (54 in fig. 5) configured to digitize said thermal measurement;

a system controller (55 in fig. 5) communicatively coupled to said signal digitizer; and

a data storage device (55 in fig. 5) communicatively coupled to said system controller, wherein said data storage device contains a plurality of offset voltage value associated with said digitized thermal measurement (col. 3, lines 18-24).

With respect to claim 45, Moon and McCartney disclose, the method of claim 42 (see above).

McCartney further discloses, wherein said offset voltage generator comprises:

a signal digitizer (54 in fig. 5) configured to digitize said thermal measurement;

a system controller (55 in fig. 5) communicatively coupled to said digitizer, said system controller configured to combine said digitized thermal measurement to a uncompensated digital color count (command word in fig. 5); and

a digital to analog converter (56 in fig. 5) communicatively coupled to said system controller, wherein said digital to analog converter is configured to convert said combined digital signal into a thermally compensated analog voltage.

With respect to claim 46, Moon and McCartney disclose, the method of claim 40 (see above).

Moon further discloses, wherein said measuring a temperature of said DLD comprises:

thermally coupling a thermal sensor to said DLD (clear from fig. 90 that the temp sensor is coupled to the DLD); and

sensing a temperature of said DLD (clearly the temperature sensor, senses the temperature of the DLD).

With respect to claim 49, Moon and McCartney disclose, the method of claim 40 (see above).

McCartney further discloses, a summing circuit, wherein said summing circuit is configured to combine said temperature compensated offset voltage with a color voltage bias (col. 4, lines 34-44) to produce said temperature compensated voltage.

With respect to claim 50, McCartney discloses, a processor readable medium (55 in fig. 5) having instructions thereon for:

sensing a temperature change of a LCD (col. 4, lines 18-20); and

modifying a voltage provided to said LCD in response to said sensed temperature change (col. 4, lines 21-33).

McCartney does not expressly disclose, sensing temperature changes in a DLD.

Moon discloses, sensing temperature changes (temp sensor, temperature control in fig. 90 (on sheet 33 of 51); col. 24, lines 17-36) in a diffractive light device (2^{nd} sentence in abstract; col. 7, lines 26-31).

Moon and McCartney are analogous art because they are both directed to the same problem solving area, overcoming thermal effects.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the LCD of McCartney with the DLD of Moon for the well-known benefit of increased contrast possible with DLD devices.

Therefore it would have been obvious to combine Moon with McCartney for the benefit of increased contrast to obtain the invention as specified in claim 50.

With respect to claim 51, Moon and McCartney disclose, the processor readable medium of claim 50 (see above).

McCartney further discloses, wherein said modifying a voltage provided to said DLD comprises:

receiving a signal associated with said sensed temperature change (output of 54 in fig. 5); and

generating a temperature compensated offset voltage based on said signal (col. 4, lines 27-30).

With respect to claim 52, McCartney and Moon disclose, the processor readable medium of claim 51 (see above).

McCartney further discloses, wherein said processor readable medium further has instructions thereon for:

digitizing said signal (54 in fig. 5);

providing said digitized signal to a data storage device (55 in fig. 5); and

receiving a temperature compensated offset voltage value from said data storage device (col. 3, lines 18-24).

With respect to claim 53, McCartney and Moon disclose, the processor readable medium of claim 52 (see above).

McCartney further discloses, wherein said data storage device comprises a data lookup table (col. 4, lines 23-27).

With respect to claim 54, McCartney and Moon disclose, the processor readable medium of claim 51 (see above).

wherein said processor readable medium further has instructions thereon for:

digitizing said signal (54 in fig. 5);

combining said digitized signal with a digital color count (command word in fig. 5); and

converting said combined signal to an analog voltage (56 in fig. 5).

7. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCartney et al. (US 5,088,806) in view of Moon et al. (US 7,019,883) and further in view of Hung et al. (US 6,329,738).

With respect to claim 41, McCartney and Moon disclose, the method of claim 40 (see above).

Moon further discloses, wherein said thermal effects comprise thermal growth which degrades optical alignment.

Neither Moon nor McCartney expressly disclose, that the thermal effect comprises a change in spring force exerted by a flexure on a pixel plate.

Hung discloses, that a changing length of a flexure/pixel plate affect the spring force in the DLD device (col. 14, lines 11-14).

Hung, Moon and McCartney are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to also compensate the DLD of Moon and McCartney for a change in spring force as taught by Hung.

The motivation for doing so would have been to ensure that the intended deflection of the pixel plate is occurring regardless of temperature, thereby increasing display quality.

Therefore it would have been obvious to combine Hung with Moon and McCartney for the benefit of better display quality to obtain the invention as specified in claim 41.

8. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCartney et al. (US 5,088,806) in view of Moon et al. (US 7,019,883) and further in view of Naiki et al. (US 7,038,654).

With respect to claim 43, McCartney and Moon disclose, the method of claim 42 (see above).

Neither Moon nor McCartney disclose, a low pass filter.

Naiki discloses, wherein an offset voltage generator comprises:

a buffer amplifier (OP2 in fig. 4; fig. 4 is a view of the temperature sensor circuit);

a low pass filter (13 in fig. 10) electrically coupled to said buffer amplifier (col. 11, lines 46-49); and

a scaler (14-15 in fig. 8) electrically coupled to said low pass filter (clear from fig. 8 that all the components are electrically coupled).

Naiki, Moon and McCartney are analogous art because they are all from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the offset voltage circuitry taught by Naiki in the display device of Moon and McCartney.

The motivation for doing so would have been a more accurate temperature sensor with only a negligible measurement error (Naiki; col. 2, lines 1-4).

Therefore it would have been obvious to combine Naiki with Moon and McCartney for the benefit of more accurate temperature measurements to obtain the invention as specified in claim 43.

9. Claims 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCartney et al. (US 5,088,806) in view of Moon et al. (US 7,019,883) and further in view of Mori et al. (US 5,903,251).

With respect to claim 47, Moon and McCartney disclose, the method of claim 46 (see above).

Neither Moon nor McCartney expressly disclose what type of temperature sensor is used.

Mori further discloses, wherein said temperature sensor comprises a thermal sense resistor (thermistor; col. 4, line 18).

Moon, McCartney and Mori are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by Mori on the diffractive light device of Hung.

The motivation for doing so would have been to provide a more accurate and reliable displayed image even when temperature distribution is present in the display panel (Mori; col. 2, lines 35-38).

Therefore it would have been obvious to combine Mori with McCartney and Moon for the benefit of a temperature-independent display to obtain the invention as specified in claim 47.

With respect to claim 48, Moon and McCartney disclose, the method of claim 47 (see above).

Neither Moon nor McCartney expressly disclose measuring an average temperature of an array of DLDs.

Mori further discloses, wherein said temperature sensor is configured to measure an average temperature of an array of pixels (col. 6, lines 30-45).

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by Mori on the diffractive light device of Hung.

The motivation for doing so would have been to provide a more accurate and reliable displayed image even when temperature distribution is present in the display panel (Mori; col. 2, lines 35-38).

Therefore it would have been obvious to combine Mori with McCartney and Moon for the benefit of a temperature-independent display to obtain the invention as specified in claim 49.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Blomberg et al. (US 5,561,523) discloses a MEMS structure that utilizes temperature control to facilitate tuning the device.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Will Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Wlb
10/25/06

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